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Clinical Section

*The Rheumatic Infection in Childhood

By

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Although Baillou (1538-1616), who was the first to give a good description of acute rheumatism and supplied us with the name, said that in contrast to gout it attacked children, and Sydenham (1624-89) remarks in his *Medical Observations* that rheumatism chiefly attacks the young and vigorous, it is not until the second quarter of the nineteenth century that one finds any serious mention of the disease in the treatises dealing with diseases of children.

The association of rheumatism and heart disease was first pointed out by Pitcairn in 1778. Pitcairn said that "persons the subject of rheumatism were attacked more frequently than others with symptoms of organic disease of the heart." The stethoscope was invented in 1816 and in 1826 Latham in his *Lectures* states that he taught, that heart disease was common in rheumatism and that "when the heart was affected a sound different from the sound of health always accompanied its contraction." He recognized a "bellows murmur" and at times "some strange sound difficult to describe" but which was no doubt the friction rub.

Copland is generally credited with having first suggested any connection between chorea and rheumatism. In 1821 he recorded a case of a boy of 9 years who developed arthritis followed by chorea, from both of which he made a good recovery. Six months later cardialgia, and generalized pains and anasarca appeared and he again got well. Ten months still later, chorea and arthritis returned: on this occasion the chorea was severe and ultimately led to a generalized flaccid paresis and death.

It was not till 1847, however, that what we can recognize as the first suggestion of the modern conception of the rheumatic infection was made. Begbie, who was a firm believer in the rheumatic nature of chorea, discussed this question in a communication which he read that year to the Medico-Chirurgical Society of Edinburgh. He showed from his own clinical experience and that of his colleagues how these three manifestations (arthritis, chorea and carditis) may "occur conjointly or severally in different individuals in the same family."

He wrote: "I cannot help coming to the conclusion that the simple and true view of their relation is to be found in the morbid condition of the blood which is admitted to exist in the rheumatic constitution; and this explanation will apply equally to chorea occurring in individuals or families inheriting the rheumatic diathesis—to chorea occurring in connection with rheumatism but without cardiac complications—and to chorea associated with pericarditis or endocarditis or both; the inflammatory affection of the fibrous tissues as well as the spasmodic affection of the muscles, and the derangement of the nervous system, originating in the same specific disorder of the circulating fluids."

Wells in 1812 first described the subcutaneous rheumatic nodule.

The work of Barlow, Warner and of Cheadle in the "eighties" and the "nineties" of the last century placed beyond doubt these structures in their true relationship to the rheumatic infection.

The studies of these English workers revealed their frequent occurrence in this infection, their invariable association with cardiac disease and often progressive cardiac disease, which feature imbued them with grave significance.

These then are some of the highlights in the history of rheumatic infection in childhood as taken almost verbatim from Findlay's book, *"Rheumatic Infection in Childhood."* ⁽¹⁾

Without doubt during the present century increasing interest has been taken in this disease, and any serious study of rheumatism refers almost wholly to how it affects the child and to how this has a bearing on the cardiac disease of the adult.

Rheumatic infection has a very close resemblance to tuberculosis. In young persons tuberculosis and rheumatism both assume a generalized form. Later, with age, both tend to become localized, tuberculosis as a chronic fibrous condition of the lungs and rheumatism a mitral stenosis of a fibrous nature. In both diseases there are chronicity, a tendency to relapse and a low intermittent temperature. Both conditions become progressively worse, unless properly handled. Unless unusual care is taken, 30 per cent of rheumatic children will suffer relapse, with a definite second attack within eighteen months.

Etiology:

Although many theories have been presented as to etiology, viz.: streptococcus, allergic, filter passing virus, it is admitted that the specific cause of rheumatic infection is not known.

There are certain points of importance in connection with the etiology which are generally

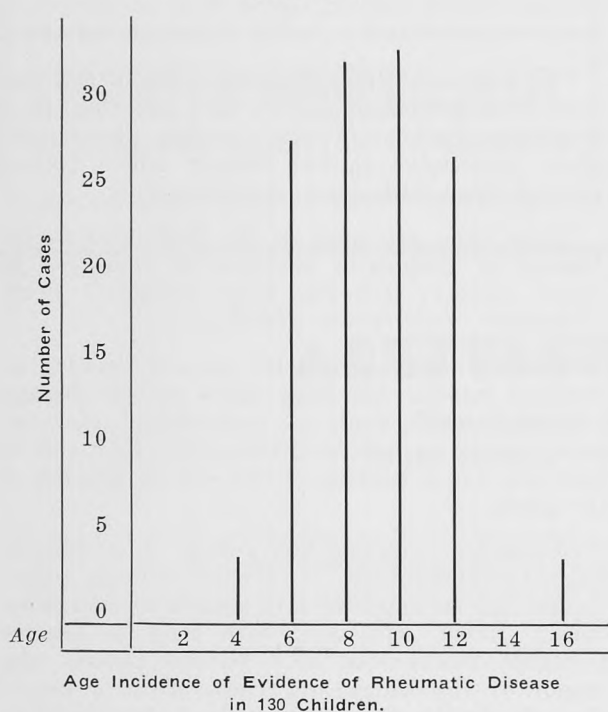
* Read before the combined meeting of the Manitoba and Ontario Medical Associations at Fort William, May, 1935.

agreed on. For example an hereditary tendency is recognized as among the causes predisposing to rheumatism. The extent of hereditary has been variously estimated, but it would appear to be well established that it shows itself in about one-third of the cases.

Rheumatic fever is much more commonly seen in girls than boys. In series to be presented girls make up 56.9% of cases.

There is no known reason why the disease is more common in girls, unless it is due to the preponderance of chorea in girls. Findlay⁽¹⁾ in a study of 321 children found that 7 years represented the most common age for boys and 10 years for girls. Kaiser⁽²⁾ in his series of 1200 children in Rochester, New York, found that the most common age incidence was between 6 and 10 years. He does not differentiate boys from girls. This agrees with our analysis as illustrated by chart No. 1.

CHART I.



On this continent rheumatic infection is more prevalent in the winter and spring months. It is undoubtedly influenced by season, though it occurs at any time of the year.

Numerous investigations have been made on the social distribution of the disease. It is a disease "par excellence" of the hospital class, or as Findlay⁽¹⁾ says "it would seem that it is not the very poorest, but rather if one may say so the better class poor families who chiefly suffer; families that have been better off and fallen on evil days." Kaiser⁽²⁾ reports many cases in the well to do laboring classes. It is rarely seen in children among really well-to-do families.

I have checked over my private records and during the last fifteen years I find that my cases of rheumatic infection number eight, four of which were diagnosed as chorea.

The factor of social standing is probably of less importance than the hygienic conditions surrounding these children. Poor housing, notably dampness, have been noted by British and American investigators as a contributing factor to the etiology of rheumatism, and until we discover the real exciting cause of the disease, and are able to stamp it out at its source, certainly and surely show us the direction in which preventive measures should be followed.

Pre-rheumatic State:

Before going on to discuss the manifestations a word may not be out of order with reference to the pre-rheumatic state.

A great deal has been written about the pre-rheumatic state as indicated by such symptoms as recurrent attacks of tonsillitis, fatigue, anæmia, pallor, epistaxis, headache, nausea, abdominal and præcordial pain.

I agree in the main with Findlay⁽¹⁾ who states "I consider it exceedingly doubtful if rheumatic children prior to the appearance of a definite manifestation such as arthritis or chorea enjoy anything but good health." In 89% of 416 examples of chorea and arthritis under his care the onset was sudden.

Manifestations:

In the last six years 130 cases of rheumatic infection have been admitted to the wards of the General Hospital and Children's Hospital. Of these 37 cases have been admitted to the General Hospital and 93 cases to the Children's Hospital.

In the same period of time there have been admitted to the Children's Hospital 4252 Medical cases exclusive of feeding cases, so that the rheumatic cases show the low incidence 2.1%.

The 130 cases have been grouped for analysis as to the various manifestations of rheumatism, the analysis being based on the work of Findlay⁽¹⁾ in Scotland, and Kaiser⁽²⁾ of Rochester, New York.

Chart No. 2 shows the incidence of the major rheumatic manifestations in 130 cases. It is interesting to note that 31.5% of the children had had the tonsils and adenoids removed prior to the onset of the infection.

CHART II.

Chorea	56.1%	73
Carditis	56.1%	73
Arthritis	44.15%	58
Previous Tonsillitis	40%	52
Previous T. & A.	31.5%	41
Growing Pains	16.9%	22
Skin	4.6%	6
Nodules	.76%	1

Incidence of the Major Rheumatic Manifestations in 130 Cases.

Chart No. 3 shows the frequency of rheumatic manifestations in 130 children.

CHART III.

Acute Arthritis	58 or 44.15%
Incidence of Carditis	63.7%
Acute Arthritis Alone	18
Arthritis & Chorea	1
Arthritis & Carditis	33
Arthritis Chorea & Carditis	4
Chorea	73 or 56.1%
Incidence of Carditis	41%
Chorea Alone	41
Chorea & Carditis	27
Chorea & Arthritis	1
Chorea, Carditis & Arthritis	4
Growing Pains	22 or 16.9%
Incidence of Carditis	90%
Growing Pains Alone	3
Growing Pains & Carditis	19
Rheumatic Carditis	3
Incidence of Carditis	100%

Frequency of the Initial Rheumatic Manifestations in 130 Children.

Assuming that chorea in the vast majority of cases is due to rheumatic infection it was found to occur in 56.1% in this series. In Findlay's group of 701 children, it was found to occur in 53.6%. In Kaiser's series of 1200 cases, chorea represented 29.1%.

The high incidence of carditis stresses the seriousness of rheumatic disease in children.

The Diagnosis:

Although cases of rheumatic fever have been reported in children under 3 years, it is very rare

and such a diagnosis should be carefully guarded. McIntosh & Ward⁽³⁾ report 24 cases in twenty-five years, according to the records of the Babies' Hospital, New York.

The first problem in diagnosis, on account of its vital importance, is acute osteomyelitis. This may attack more than one epiphysis. As a rule the onset is more acute, the fever higher and the illness greater than in acute rheumatism. The tenderness and pain are extreme, and the lesion is epiphyseal and not articular, although there may be effusion in the neighbouring joint. Suppurative pericarditis may develop if the diagnosis is delayed. Surgical treatment is required as early as possible.

Scurvy: The common age incidence of scurvy, viz., 6 to 10 months, and age incidence of rheumatism rarely under 3 years, the subperiosteal hemorrhages, the intense tenderness of the limbs, the condition of the gums and history of dietary lack of Vitamin C, should prevent an error.

Congenital Syphilis: The arthritic form of congenital syphilis may cause some difficulty in diagnosis. Some two years ago I referred a child, aged 9 years, to the Children's Hospital, with a painful arthritis of both knees, as there was no response to salicylates. On arrival in hospital one of the internes spotted Hutchinson teeth, a 4 plus Wasserman followed and the diagnosis.

Rheumatoid Arthritis: The diagnosis of the established disease is easy, but in the early stages difficult. It tends to affect the smaller joints rather than the large ones and there is no response to salicylates in the way of lessening the pain or swelling.

Other forms of Arthritis: Septic, pneumococcal, meningococcal, tubercular and influenzal arthritis may occur in childhood, and in each case the diagnosis must be determined by the absence of other rheumatic manifestations and presence of symptoms and a history which points to an infection other than rheumatic.

Appendicitis: Arthritis of the right hip joint, on account of the vague reference of the pain to the abdomen by the child, may be mistaken for appendicitis. In checking over the records of the Children's Hospital it was noted that two boys, who were admitted with acute pain in abdomen had been operated on for appendicitis. Later arthritis appeared, making the diagnosis.

Severe Anaemias: Acute lymphatic leukaemia, particularly when there is a leucopenia and aplastic anaemia are the best examples. There are fever, anaemia, pains of a fugitive character in the limbs, purpura and sore throat, and a rapid heart. The pallor is most striking, and a skilled examination of blood should confirm the diagnosis.

Other Causes of Heart Disease: Septic endocarditis, subacute bacterial endocarditis, pneumococcal, etc., will be distinguished by a careful study of all the facts of the case.

Congenital Heart: It has been my experience on occasions to see children confined to bed for long periods, with the diagnosis of organic heart disease, where a careful history and physical examination should have led one to make a diagnosis of congenital heart.

The London School Report ⁽⁴⁾ gives the incidence of congenital heart disease as 14% of the total cases of organic heart disease, and the Bristol School ⁽⁵⁾ reports an incidence of 11% of a total of 202 cases of organic heart disease.

It has always been my practice, when a routine physical examination discovers a murmur in an infant to give a certificate to the parent that at this age a diagnosis of congenital heart was made.

The parents then have this certificate to present, should at some future date a diagnosis of organic heart disease be made with the result of curbing the child's normal activities.

Chorea:

At the outset of the paper I quoted the early and more recent investigators in support of the rheumatic nature of chorea.

Gerstley et al ⁽⁶⁾ under the title Chorea: Is it a manifestation of Rheumatic fever? questions the absolute accuracy of the orthodox concept of the rheumatic origin of Chorea.

The results of their intensive investigation covering a period of 7 years of 45 cases of Chorea lead them to this main conclusion. "In our series chorea developed in mentally alert, introverted children. These children are apparently predisposed by their particular constitution, heredity, environment and in some instances a possible endocrine imbalance. From our observations, there is little to favor a specific infectious origin of chorea. It seems to us that chorea is not a manifestation of rheumatic infection per se but that it is a clinical syndrome developing in a predisposed individual as a result of various psychic or physical insults. No matter what the exciting cause may be the choreic constitution seems of paramount importance. In our series chorea less frequently followed infection than it did psychic trauma resulting from exhausting psychic stimulation."

Schwartz and Leader ⁽⁷⁾, have observed 75 cases of so called "Pure Chorea," that is cases of chorea in which no other manifestation of rheumatism was noted clinically for from one to twelve years.

"The most constant physical sign was a systolic murmur of marked persistence at the apex, and they conclude "The heart is always involved in chorea."

In this series there were 73 cases of chorea, 41 cases or 56.1% were classified as pure chorea, and 31 cases or 43.8% showed evidence of carditis.

The Diagnosis:

Habit spasm or tic in children is frequently

confused with chorea. In habit spasm the movements are confined to one set of muscles and give evidence of a purposeful character and are repeated. The set of muscles involved may vary from time to time.

Habit spasm is very common in children of a neuropathic disposition and is decidedly more common than chorea. It is my belief that the majority of cases of habit spasm are due to psychic trauma, the child developing the habit as a defensive mechanism.

Epidemic encephalitis with choreiform manifestations may give rise to difficulty. Other evidences of encephalitis and lumbar puncture should help to distinguish. Further the movements of chorea cease with sleep and continue in sleep in encephalitis.

Prognosis:

The prognosis of the rheumatic infection is simply the prognosis of rheumatic heart disease. Even if the heart should be fortunate enough to escape in the first attack, it seldom does so the second or third time. Once the heart has been affected its lesions are likely to spread with each recurrence. As a rule the younger the child, the greater the probability of recurrences, and the worse the prognosis.

Findlay ⁽¹⁾ analyzed 257 fatal cases of the rheumatic infection regarding the age of onset and duration of life. His conclusion was that the mean duration of life after infection steadily increased from 3.2 years, when this was incurred during the first five years to 22.7 years, when the disease commenced during the age period 20 to 25 years.

It is generally agreed that the presence of nodules adds considerably to the gravity of the outlook. Of 72 cases observed by Poynton ⁽⁸⁾, 27 died from carditis, or about 37 per cent.

Mitral endocarditis, not of the progressive type producing stenosis, may recover completely or be compatible with long and useful life. It has been our experience to see mitral systolic murmurs completely disappear. This can only occur when the myocardium has not been affected. If there has been severe myocarditis, it may run a disastrous course and be fatal even in childhood. A mitral stenosis, that causes definite symptoms of cardiac weakness is ill-omened. Aortic and mitral endocarditis is always a serious lesion if the aortic incompetence is predominant.

Any evidence of progressive circulatory failure is unfavorable; a falling blood pressure, weak heart sounds, sudden disappearance of murmurs and pulsus alternans are ominous signs.

Chart No. 4 illustrates the result of a "follow up" on 68 cases of the 93 cases admitted to the Children's Hospital by the Social Service Department. Twenty-eight cases were re-examined at the clinic. The report on the remainder was obtained by visits, letters, etc.

CHART IV.

93 Cases Rheumatic Infection Admitted to Children's Hospital 1928-35

Follow-Up Report on 68 Cases — to March, 1935

CLASSIFICATION AS TO MANIFESTATIONS

Arthritis	32 cases	Chorea	26 cases	Chorea - Carditis - Arthritis	5 cases
Full Activity	29 cases	Full Activity	26 cases	Full Activity	3 cases
Limited Activity	3 cases			Limited Activity	2 cases

Deaths 7.3% 5 Cases

Chorea - Arthritis - Carditis	1 case
Arthritis and Carditis	4 cases

Re-Examination at Clinic - 28 Cases

Arthritis	8	Chorea	16	Chorea - Arthritis - Carditis	4
No Carditis	6	No Carditis	15	No Carditis	3
Slight Carditis	2	Sl. Carditis	1	Moderate Carditis	1

Treatment:

During the acute attack with arthritis one's objective is to afford symptomatic relief and to limit as far as possible the cardiac damage.

Although salicylates are often spoken of as specific anti-rheumatic drugs, it is highly doubtful that they possess any such effect. They will abolish fever, joint swellings, muscle pains and tenderness, and hence give marked symptomatic relief, but there is no evidence that they shorten the course of the infection or limit its spread or the possibility of recurrences.

Sodium salicylate combined with an equal or twice the amount of bicarbonate of soda in divided doses may be given up to 60 grains daily to a five year old child. Double this dose may be given to a child of ten. Should toxic symptoms develop such as ringing in the ears, dizziness or vomiting the medicine should be stopped for 12 hours and then commenced again with half the dose.

In cases which exhibit an intolerance to salicylates, aspirin in similar dosage may be employed.

In cases of arthritis, where no symptomatic improvement occurs under adequate dosage of salicylates or aspirin within four days, the diagnosis is in error, and should cause one to consider other possible diagnoses of arthritis, viz., septic, osteomyelitis, syphilitic, tuberculous, etc.

Chorea:

Although in the last ten years, many drugs have been advocated by various enthusiastic investigators, viz., Fowler's solution, salicylates, aspirin, nirvanol, phenobarbital, and lately hyperpyrexia induced by the administration intravenously of typhoid T. A & B vaccine daily. I am convinced that rest, isolation, nursing care, and time, six to ten weeks is the most essential in the cure of Chorea.

After the acute symptoms have subsided, how long should the child remain in bed to prevent or limit cardiac damage?

Findlay ⁽¹⁾ with his experience recommends three months in bed, even for the mildest case, and gives salicylates constantly.

It is my practice to keep the child in bed for six weeks after the acute symptoms have subsided. This regimen is enforced regardless of whether or not there are evidences of cardiac involvement; the disease must be considered as active in the heart, if active elsewhere.

One may be guided by following signs taken together as to cessation of activity. A normal rectal temperature 99°-100° for three weeks, after the withdrawal of antipyretics drugs. leucocyte count of not more than 8000 to 10000, improvement in cardiac function, as indicated by a lessened sleeping pulse rate, improvement in nutrition and disposition.

Struthers and Bacal ⁽⁹⁾, from observations on Sedimentation rate of red blood cells in the determination of activity of Rheumatic infection in Childhood, state "that it would appear that the sedimentation rate is of value in demonstrating the absence of cardiac complication in chorea when it remains persistently normal. Similarly the sedimentation rate, when persisting at a high level in the absence of clinical evidence of carditis, may be of value in demonstrating the likelihood of oncoming cardiac complication in rheumatic fever. In well established cardiac disease, well compensated, the sedimentation rate may fall to and remain normal after the subsidence of the infection, demonstrating that the cardiac signs present are not indicative of active cardiac infection, but rather of healed disease leaving a damaged cardiac mechanism."

Once a child is convalescent it is important that he have a moderate amount of activity, and not be made to believe that he is a cardiac cripple. This can be done by first allowing bathroom privileges, then up for one hour, two, three hours daily, impressing on the child that should he feel the slightest difficulty in breathing he must rest.

In this way a great many children can enjoy most childhood activities.

The rheumatic child should have special care and more rest than the normal child but he should not be made miserable by being reminded repeatedly of his ailment.

Following the acute attack much can be done to prevent a recurrence. Attention should be given to the diet and to the treatment of anaemia if this is present. Exposure to dampness and cold should be avoided.

It seems reasonably certain that upper respiratory infections,—not only tonsillitis, but common colds, sinusitis, etc.,—all predispose to rheumatic recurrences. Such infections should be avoided when possible. Known foci of infection should be removed such as carious teeth. The results of tonsillectomy have on the whole been disappointing. Kaiser⁽²⁾, in a most extensive study, was unable to show that recurrences were reduced, although he did find that first attacks of rheumatism developed less frequently in children whose tonsils had previously been removed. The routine removal of tonsils in rheumatic children should be deprecated; they should be taken out only when obviously diseased.

This is very much in contrast to the teachings of even a few years ago, viz., that as soon as an acute attack is over and quiescent, the first step to prevent recurrence of infection was to remove the tonsils.

I desire to express my thanks to Dr. Anna B. Wilson, house physician at the Children's Hospital, and Dr. A. Gray, house physician at the General Hospital, for their assistance in the analysis of the hospital records.

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*The Trachoma Problem

F. D. McKENTY, M.D. (Man.), F.R.C.S. (C.)
Winnipeg

Trachoma has been a subject of rather remote interest for most Canadians. The disease is associated with a few localities only and for the most part the Dominion has been regarded as practically trachoma-free. The laity are often ignorant of even the name, and the medical profession itself, excepting the few especially concerned with eye disease, has regarded the subject with a degree of apathy.

At one time I spent several years in practice in the chief focus of trachoma in this country and have retained connection with the district ever since, a period in all of over thirty years. This experience has left me deeply impressed with the serious character of the disease, with the relentlessness of its spread and the tremendous difficulty of its eradication.

It is the purpose of this paper to present in particular these aspects of the disease.

DEFINITION

As the causative agent of trachoma is still a matter of discussion, a satisfactory definition at this time, must include its essential clinical characteristics. Trachoma may be thus defined as a chronic granular disease of the conjunctiva, capable of extending to the cornea and giving rise to cicatricial changes.

HISTORY

References to a disease of the eyes which corresponds with the foregoing definition are contained in Egyptian records of about 3000 B.C. From this region, which has ever since remained the chief focus, the disease seems to have followed the lines of trade and the paths of invading armies, along the Mediterranean littoral. Herodotus and Plato complained about the importation and spread of ophthalmia by foreigners. Hippocrates described the disease and advised treatment. The armies of Rome appear to have been widely infected, and eminent citizens like Cicero, Horace and Pliny the Younger probably suffered from the disease. While much confusion in diagnosis no doubt existed in ancient times between trachoma and other forms of conjunctivitis, and persisted through the middle ages, the records of the early spread of trachoma are generally accepted.

DISTRIBUTION

Trachoma infection is now practically worldwide. The degree of incidence varies in the different countries, as shown by the accompanying

* Read before the Winnipeg Medical Society, January 15, 1932. Published by kind permission of the Editorial Board of the Canadian Public Health Journal.

map. This has been redrawn from one compiled by Dr. Wibaut of Amsterdam from official reports to the International Committee for the Investigation of Trachoma and supplemented by information from other sources. Experience has shown that statistics of the incidence of trachoma may be misleading unless they are subjected to some revision. The usual sources of such estimates and their comparative reliability, according to Wibaut, are as follows:

Compulsory notification. This always results in underestimates which at times show no more than ten per cent of the actual total.

Examination of school children and military recruits. This is exact in proportion to the skill and thoroughness of the examination. Re-examination by oculists has uncovered two and one-half times as many cases as examination by practitioners without experience.

Examination of representative samples of the population. This gives figures that are usually much too high.

The proportion of trachoma in eye clinics. This varies greatly with the time and conditions; on the average, the incidence of trachoma in the general population may be taken as about one-third its incidence in the eye clinics.

The relative frequency of trachoma as a cause of blindness. This is of little value with present methods of registration.

General estimates, by those qualified and acquainted with local conditions. This can give a rough approximation only.

All countries and races are affected in some degree, with the possible exception of the Eskimo. Great Britain and the Scandinavian countries are almost free. The proportion increases markedly through central and eastern Europe, reaching its highest in Egypt and the adjacent regions of Asia and North Africa where nearly one hundred per cent of the population are affected. Throughout Asia, especially in China, one-half or more of the inhabitants suffer from trachoma. These regions contain three-fourths of the world population. There is some evidence to suggest that these estimates may be too conservative; for instance, the French report of 1926 recorded 67 cases of trachoma for all France, whereas in the same year in Aubaret's clinic in Marseilles, 387 cases were under treatment (Grosz). Reports differ considerably in their estimates and the present figures are not to be regarded as final.

In the new world, especially South America, such reports as are available indicate that trachoma is fairly widespread and in certain regions seriously prevalent. In the United States the disease is well established. The distribution is variable but there is a high incidence in some densely populated regions. The Virginias, Kentucky, Tennessee, Southern Illinois, Missouri, Arkansas and Oklahoma have an estimated percentage in-

cidence of from 8 to 12. Hospital eye clinics in Knoxville, Tenn., Richmond, Va., Rolla, Mo., and Russellville, Ark., report an average of 39 per cent trachoma. This would indicate about 13 per cent in the tributary population. The backward inhabitants of the Appalachian and Ozark mountains are the white people most affected. Surveys have shown over 6 per cent trachoma in the schools of Imperial county, California. The Bureau of Hygiene registered over ten thousand cases in New York City in 1908; this is almost as many as have been reported in Hungary, a country which is considered seriously infected. Among the Indians of the United States the general average of infection is said to be about 10 per cent and in some tribes almost 30 per cent. An observation of significance has been reported by Dr. Taliaferro Clark: between 1913 and 1923 the proportion of Indian children attending public schools near the reserves in Minnesota had increased threefold and there had been a corresponding increase in trachoma among the white children.

Distribution in Canada

In Canada the prevalence of trachoma is not yet a matter of statistics, except in a few areas in the middle West. Throughout the country in general, the disease is uncommon and in native white Canadians decidedly rare. Regina and Calgary hospitals report a few cases each year. The Kingston General Hospital had three cases in 1931, all in Chinese. In Winnipeg, the Misericordia Hospital reports 10 per cent trachoma among eye diseases. In the Montreal clinics the proportion of trachoma has been reported as 3.6 per cent (Foucher), but the statistics of the larger general hospitals in Montreal, Toronto and Vancouver appear to be inaccessible.

The Canadian National Institute for the Blind reports trachoma-blind in all the provinces of Canada except Prince Edward Island. The method of certification, however, renders the report of little value as a measure of the prevalence of the disease.

The Dominion Government and some of the provincial governments have the subject under investigation but exact figures as to the incidence of trachoma throughout Canada are not yet available. Dr. E. L. Stone, Director of Medical Services of the Indian Department, reports much trachoma among the Indians, and the Department is now engaged with measures of control.

For such information as I have been able to gather concerning the more northern Indians and Eskimos, I am indebted to Dr. Joseph Heinbecker of Washington University, St. Louis, to Dr. N. H. Bowers of New York City, and to Mr. Louis Romanet of Edmonton. They were consistently of the opinion that the Eskimo of northern Hudson's Bay coast and Baffin Land are practically free from trachoma. This agrees with the report of Professor von Groenholm, that there is no trachoma in Greenland or among the Eskimo.

quently enter domestic service as maids or nurses thus coming in close contact with young children. The boys often engage with harvest gangs, thus exposing the other members to the menace of the common towel. These, with immigrants from other Eastern European countries, Poland, Hungary and the Ukraine, are responsible for the scattered outbreaks of trachoma which are being revealed by the present survey. This serious dissemination is indicated on the accompanying map of the Province.

ETIOLOGY

The infectious nature of trachoma is obvious but the causative agent has been difficult to isolate. Four main steps have marked the train of investigation:

1. The study of accidental personal infections, by Quaglino, Cuignet, Manz and Horner.

2. The successful experimental inoculation of human beings, by Sattler and Addario in 1906, Miyashita in 1908, Cuenod and Blaizot and others. This showed the period of incubation to be 4 to 10 days.

3. The successful inoculation and transmission of trachoma in monkeys, by Hess and Romer in 1906 and later by Nicolle, Cuenod and Blaizot. Some conclusions of the latter are of interest:

- (a) the onset of trachoma is insidious, "without inflammatory reaction and without secretion."

- (b) "A diluted virus, or the tears alone, are sufficient to provoke infection." (c) "The virus survives in glycerin for seven days at freezing temperature. It is destroyed by drying for half an hour at 32 degrees C."

4. The isolation by Hideyo Noguchi, of a micro-organism which he named the Bact. granulosis. Noguchi's investigation was based on the work of his predecessors. It was carried out in 1927 with trachoma virus and tissue obtained from the Indians in New Mexico, which, "according to clinical and pathological studies, is to be classed with trachoma as observed in other parts of the world (H.N.)." It is noteworthy that only old cases of trachoma with cicatricial changes were used. The method consisted of systematic culturing and inoculation of monkeys with the organisms found. This led eventually to the isolation of a micro-organism which, "when inoculated in pure culture on the conjunctiva of the ape, produces a form of persistent granular conjunctivitis, closely resembling and apparently identical with trachomatous granular conjunctivitis in man (H.N.)."

The Bact. granulosis conforms with Koch's postulates and was in its fifth series at the time of Noguchi's report.

Direct infection is the essential factor in the spread of trachoma. This important fact has been sometimes obscured by the great emphasis placed upon poverty and dirt in the etiology. Important

as these latter factors undoubtedly are, they are not essential to the propagation of the disease.

How and when does infection with trachoma occur?

The clearest answers to these questions are found in the conclusions of Professor Sosuke Miyashita of Tokio, drawn from his extensive experience as Director of the Japanese survey in which nearly forty millions of the population have been examined.

- (a) Trachoma begins in the nursing period. The frequency shows a marked increase in the age period from five to ten years. The maximum occurs in the eighth year. It decreases during middle age and again reaches a climax at from fifty to fifty-five.

- (b) Trachoma infection sets in mainly sometime in the first twenty years; among eye diseases it is most often encountered at the age period from fifteen to twenty years.

- (c) The severe and complicated type increases in frequency constantly with the age.

- (d) The female sex is always most affected by trachoma—in frequency, severity and complications. In this it corresponds to tuberculosis.

- (e) The chief source of infection is the mother; she infects her children in nursing. The next most frequent source is from small children either within the family or from outside. Wakisaka estimates that familiar infection accounts for about 60 per cent of all cases, and that about 40 per cent occur directly from mother to child.

- (f) The families of infected school children show more than twice the percentage of infection of the community in general.

Infectiveness increases during epidemics associated with conjunctivitis, such as measles or colds, and irritation from dust during the field work of spring and harvest has a similar effect. Trachoma is especially frequent among peasant farmers and in fishing villages. Under control measures it declines more quickly in large cities than in the surrounding regions (Groenholm).

Morax and Lakah, from their great experience in northern Africa make the following statements:

"We have established that one-half or less of nurslings have been already contaminated in the course of the first year" and "between nurslings infected and those not infected, we observed no difference in the external appearance of the lids and the palpebral fissure. They showed neither hyperaemia of the bulbar conjunctiva nor manifest secretion and only by everting the lids was the condition revealed."

These conclusions are fully confirmed by the results of other completed surveys; they may be accepted as a reliable guide for measures of control.

TREATMENT AND PROGNOSIS

It is not within the scope of this paper to enter into the details of treatment of the individual. Hippocrates (460-377 B.C.) curetted the granulations and applied a salt of copper; Aetius (502-575 A.D.) removed the tarsus; in the seventh century, Paul of Aegina performed plastic operations by splitting the lid, for trichiasis and entropion. These are the essentials of the treatment described in any textbook of the present day. Disappointing results are, however, more common than most text-books imply. MacCallan says: "It must be confessed that our present knowledge does not assist us to give help to the natural body processes [of cicatrization]; at present the only known methods of causing this change are by the application of caustics directly to the conjunctiva."

It is no doubt true that in a large proportion of cases, trachoma undergoes a spontaneous cure. The high percentage of recurrence in later life uncovered by recent surveys suggests that it would be better to regard many such cases as quiescent rather than cured. Patients with quiescent trachoma are prone to intercurrent attacks of acute conjunctivitis with exacerbations of trachoma remnants and often corneal complications. During such attacks infectiousness is increased. Apart from the control of complications, the chief value of routine treatment lies in the fact that it does greatly reduce the infectiveness.

The ultimate effect of trachoma on the sight is indicated by the following summaries:

TABLE I
APPROXIMATE PERCENTAGE OF VISION AFTER TRACHOMA

Authority	Blind	Bad V.	Fair V. $\begin{smallmatrix} 6 & 6 \\ - & \\ 12 & 18 \end{smallmatrix}$	Good V. $\begin{smallmatrix} (6 & 6) \\ - & \\ & 6 & 9 \end{smallmatrix}$
MacCALLAN From examination of 1500 cases of trachoma in the Village of Baktum, Egypt -----	1.0	48	36	16
		Only able to go about	Able to read with difficulty	Good V in the better eye
GROENHOLM From 462 cases in private practice	2.0	7.0	20	70

The above figures may not be generally applicable; private patients would present a large proportion of serious and complicated cases, while the Egyptian figures are affected by the prevalence of other varieties of severe eye affections.

MacCallan says that, in the Irish Free State, more than 20 per cent of the trachomatous become statutorily blind (V less than 6/60).

The careful Lithuanian Survey found that 2.5 per cent of the trachomatous had become blind from the disease.

To the serious degree of social disability revealed by the above figures, there must be added the discomfort and economic handicap endured by the victim of trachoma over an indefinite term of years. Poverty and squalor may be as well the result of trachoma, as the cause.

MEASURES OF CONTROL

The International Committee for the Investigation of Trachoma recommends various measures of control. These include:

- (1) Control of immigration.
- (2) Compulsory notification.
- (3) Examination and treatment of school children.

(4) Segregation of the infected children in special schools.

(5) Free treatment of all trachoma cases.

(6) The establishment of trachoma stations and special departments in hospitals.

(7) The special training of general practitioners to qualify them for diagnosis and treatment.

(8) Supervision of surveys and treatment stations by a centralized administration.

In Great Britain inspection of school children and strict segregation of the trachomatous in special schools has reduced the percentage of cases from 42 to less than 5 in twenty-two years. Such patients may have to be segregated for two or three years and the method is feasible only where there are few cases.

In East Prussia in 1899, 13 per cent of school children were trachomatous. An energetic campaign was begun, which included monthly school examination, free treatment in special trachoma wards followed up after discharge, popular instruction and special training for local practitioners. In six years the trachoma had declined from 13 per cent to 3.5 per cent.

In Egypt a vigorous campaign by prophylaxis and treatment in the schools and with stationary and travelling eye hospitals has succeeded in reducing the percentage of trachoma from 97 to 94.6—only 2.4 per cent in twenty years.

Wibaut says: "Although in many countries the trachoma situation is a terrible one, there is no reason so far, for too pessimistic an outlook. Even in the countries most affected, the fight against trachoma does not seem to be without effect." *Such effect as the record shows appears to be in inverse proportion to the prevalence of the disease at the beginning.*

The control measures recommended are not everywhere feasible or of equal value. The selection must depend upon such local conditions as the degree of prevalence, the social standard of the population concerned and the financial resources available. Throughout Canada in general, where cases are few and scattered, the method adopted in Great Britain, of inspection and segregation, would appeal as the most prompt and effective. In localities where the disease is firmly entrenched, segregation is probably impractical and dependence must be placed upon a combination of other measures. For these, the similarity of local conditions should make the East Prussian campaign a reliable guide.

There is, however, one factor which I believe is of supreme importance and which has not yet been sufficiently stressed. It is indicated in the following re-statement: *The propagation of trachoma occurs mainly within the family, and the liability to infection is at its highest with nursing mothers and very young children.* These are the members of society least amenable to outside control. No arbitrary methods can reach them. They are responsible for two thirds of the spread of trachoma.

The nursing mother does not willingly infect her children or allow them to infect each other. It is the result of ignorance of the nature of the disease. Poverty is but a small factor. Obviously the only agent that can reach this most important source is education—*education carried on by whatever means may be found most effective, to the stage where willing and active co-operation is insured.* The other measures are secondary to this end and important mainly in proportion to the degree in which they further it. The French Bureau of Hygiene has condensed its instructions to the staff in Morocco into two admirably simple and clear rules:

- (a) Look for and treat those who have trachoma as soon as possible.
- (b) Instruct those who live in contact with the disease what they should do to keep themselves and their children free.

In their school campaign the French have made free use of pictorial placards which should be particularly effective and appropriate for use in this country.

Wherever serious foci of trachoma are uncovered, a campaign according to the above measures should be undertaken. It should be focussed chiefly in the schools but supplemented also by lectures and the local press. It is peculiarly important that, in the districts chiefly affected, the support of the local leaders, clerical, lay, and educational, should first be enlisted. Such support will insure a ready response; lack of it will lead to failure. Such a campaign must be sustained until the present generation of school children comes to maturity. In this way only can intelligent co-operation be permanently secured. Lacking this, it is impossible to see how any other measures, however stringent or rigidly applied, can prevent mothers from infecting their infants and continuing to spread this serious disease.

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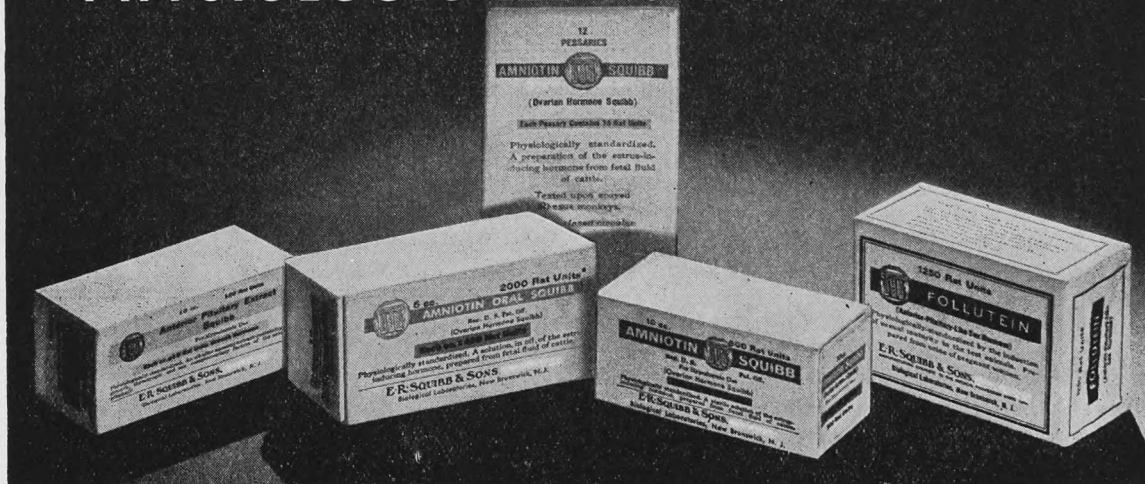
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The Manitoba Medical Association Review

Formerly the Bulletin of the Manitoba Medical Association

ESTABLISHED 1921

WINNIPEG, JULY, 1935

Published Monthly by the

MANITOBA MEDICAL ASSOCIATION

Editorial Office

101 MEDICAL ARTS BUILDING, WINNIPEG

Editor

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J. GORDON WHITLEY

Annual Subscription - \$2.00

*Editorial or other opinion expressed in this Review is not necessarily
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Executive Meeting

Minutes of a meeting of the Executive of the Manitoba Medical Association, held in the club-rooms of the Medical Arts Building on Monday, May 27th, 1935, at 6.30 p.m.

Present:

Dr. F. D. McKenty - Chairman	
Dr. J. C. McMillan	Dr. E. S. Moorhead
Dr. F. G. McGuinness	Dr. G. D. Shortreed
Dr. W. G. Campbell	Dr. C. W. MacCharles

Dr. McKenty advised that this meeting had been called for the purpose of giving instructions to the delegates from our Association, attending the Canadian Medical Association meeting in Atlantic City, N.J., June 10th to 14th, 1935.

Dr. McKenty then read report made by Dr. W. Harvey Smith, who was the representative of the Association at the last Council Meeting of the Canadian Medical Association; and also reviewed report of Committee submitted to a previous meeting.

Following discussion, it was moved by Dr. J. C. McMillan, seconded by Dr. F. G. McGuinness:

That the representatives of the Manitoba Medical Association to the Council of the Canadian Medical Association are hereby instructed that any proposed changes to the Constitution or By-Laws of the Canadian Medical Association that require the co-operation of the Provincial associations, should first be submitted in detail to the Provincial associations for their future consideration before agreeing to such changes. —Carried.

Dr. McKenty suggested that the delegates from the Western Provinces should also be familiarized with the report of Committee on the above matter, and following discussion Dr. McKenty was authorized to wire the secretaries of the Western Provinces and endeavor to have their delegates call and see him when passing through Winnipeg on their way to Atlantic City.

Meeting adjourned.

Post Graduate Course Faculty of Medicine

September 9th to 14th, 1935

The post graduate course of the Faculty of Medicine will be held this year September 9th to 14th, inclusive. The course this year will deal principally with preventive medicine and public health and is arranged by co-operation with the Department of Health of the Province of Manitoba. In view of the fact that the clinical section of the Annual Meeting of the Manitoba Medical Association was held in May in conjunction with the Ontario Medical Association, the annual business meeting of the Manitoba Medical Association will be held during the week of this course.

In addition to the regular lectures there will be addresses by three clinicians from Eastern Canada: Dr. Meakins, Professor of Medicine at McGill and President of Canadian Medical Association, Dr. Cone of the Neurological Institute, Montreal, and Dr. Harris of the Surgical Department of the University of Toronto.

The outline of the tentative programme includes discussion of Diphtheria, Trachoma, Child and Maternal Hygiene, Cancer, Venereal Disease, Mental Hygiene, Chronic Respiratory Sepsis and Injuries and Infection of the Hand. Dr. Wall, Director of Trachoma Control, Department of Indian Affairs, will show a series of cases from the Indian Reserve.

Members of the Manitoba Medical Association and all other medical men are urged to attend.

Proposed Survey of Relief Medical Services in Winnipeg

Since February 28th, 1934, a plan for supplying medical services to the unemployed on relief, has been in operation in the City of Winnipeg. The average number of these has been about 34,000, and a relatively large mass of records has been accumulated. It was felt that a study of these records might provide information which would have an important bearing on the question of provincial or Federal Health Insurance. It is acknowledged that the group is too limited and the period too short, to enable actuaries to give an accurate estimate of the cost, etc., of providing health insurance for a diversified population, but it is believed that a cross analysis of the complete medical history of a body of people of this magnitude will be of inestimable value. The opportunity for this analysis is unique in Winnipeg, as, for some time past, each case receiving medical attention of any kind, must be fully reported upon by the attending physician or surgeon. If a similar survey could be carried out in other areas, and on different categories of the population, governments and the professions would be on much safer ground in approaching

the question of health insurance. A large amount of material is now available, which when properly sifted, will yield valuable information regarding incidence of disease in a section of an urban population.

Through the financial assistance of the Department of Health of the Province of Manitoba, the services of Dr. M. R. Elliott, who has just completed the Public Health course in the University of Toronto, have been secured for the purpose of conducting the survey. The Unemployment Relief Department of the City of Winnipeg, has very courteously placed its files at the disposal of Dr. Elliott, and has also provided accommodation for him.

Bearing in mind the possibility of future discussion concerning Public Health Insurance schemes, with the attendant medical costs, and with a view to obtaining the greatest amount of information from the material at hand, the following plan has been outlined as a basis for the investigation:

The cases are primarily divided into three distinct groups:

1. **Medical.**
2. **Surgical.**
3. **Obstetrical.**

Each of these groups will be analyzed under the following headings:

No. 1. MEDICAL CASES.

No.	Name	Age	Sex	Doctor	Diagnosis	No. of Calls Home Office	Length of Illness
Consultants Name Cost		Special Examinations		Doctor's Fee Home Office		Total Costs	Remarks

No. 2. SURGICAL CASES.

No.	Name	Age	Sex	Doctor	Diagnosis	Surgeon	Operation Performed Minor Major
Hospital Days in	Hospital Costs	Surgeon's Fee	Physician's Fee	Total Costs		Pathological Reports	Remarks

No. 3. OBSTETRICAL CASES.

No.	Name	Age	Doctor	Diagnosis	Hospital (if any)	Days in Hospital	Hospital Costs inc. spec. services
Consultations Name Costs		Doctor's Fees - Home or Hospl.		Children Born M. F.		Stillbirths Maternal Deaths	Total Costs

With the above information once tabulated, it will be possible to gain the following information:

1. General Morbidity Rate from all causes.
2. Birth rate in this class compared to general population.
3. Morbidity Rate due to Specific Diseases.
4. Age incidence of specific Diseases.
5. Average length of illness per person.
6. Average length of illness per disease.
7. Average total cost of illness per person and per disease.
8. Average length of hospitalization per person and per disease.
9. Average cost of hospitalization per person and disease.

10. Total and Average amount of surgery, Major and Minor, with costs.
11. Costs of special services, such as X-ray, Blood examinations, Basal Metab., etc., etc.
12. Number, Nature and Costs of Consultations.
13. Maternal Mortality Rate, as compared to General Population, and with hospitalized cases compared to home cases.
14. A comparison of Pathological reports with pre-operative diagnosis.

While it is admittedly true that this group represents a special class, and that the data obtained will not necessarily apply to all groups of people living under entirely different surroundings, yet it is hoped that this investigation will form a valuable basis for future studies, and that information of vital value to the Medical Profession and to the community as a whole will result.

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OBITUARY

DR. J. G. MUNROE

Dr. J. G. Munroe of Winnipeg died after a brief illness on June 3rd, at the age of 62. He was born in Pictou, Nova Scotia, in 1873, and graduated in medicine from Dalhousie University in 1899. After post-graduate work he came to Winnipeg in 1903 and entered general practice. In 1911 he was elected to the City Council and served for five years, during the last four of which he was Chairman of the Committee on Public Health. He was a past president of the Native Sons of Canada and a member of the Masonic Order. He is survived by his widow, one son, Dr. J. D. Munroe, of Enderby, B.C., and one daughter.

DR. J. R. GUNNE

Dr. J. R. Gunne, of Dauphin, died suddenly at his residence on June 5th, aged 63. He came to Dauphin in 1893, his father being Dominion Land Agent. For the first few years he was the only doctor in the community and answered calls as far as fifty miles away, becoming a familiar figure in the community. In 1903 he became member for Dauphin in the Provincial Legislature. In 1905 he moved to Kenora and went into partnership with his brother, Dr. J. W. F. Gunne. With a view to going into the special field of eye, ear, nose and throat, Dr. Gunne made two trips to Europe, first in 1905 and again in 1910, taking post-graduate work in London and Vienna. On his return from the latter visit he came to Winnipeg and practised with Dr. A. W. Moody for eight years. During this time he was on the staff of the Winnipeg General Hospital. In 1918 he moved to Dauphin and organized a medical clinic and resided there until his death.

Dr. Gunne took a great interest in agriculture and for years was president of the Dauphin Agricultural Society. His first wife died in 1922 and in 1928 he was again married. He is survived by his widow and a young son, also by his brother, Dr. Gunne of Kenora, and four sisters. At his funeral on June 7th, the Hon. D. G. McKenzie, Minister of Agriculture in the Provincial House, paid a tribute to his activities in agriculture.

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Department of Health and Public Welfare

NEWS ITEMS

Home Canning and Public Health

The following excerpts are taken from a paper read by F. W. Tanner at the annual meeting of the American Public Health Association, September, 1934, and printed in the American Journal of Public Health.

The art of food preservation by canning in the factory has never been on a sounder basis than it is today. Hundreds of thousands of dollars have been spent to bring the industry to its present position. Spoilage has been greatly reduced and no outbreaks of botulism have been attributed to factory-canned foods packed in America since 1925. This statement

becomes still more significant when the relatively small amounts of home-canned foods in contrast to the large amounts of factory-canned foods are considered. The situation for home-canned foods, however, is not so fortunate. Procedures are still recommended to the home-maker which not only give products which may not keep well, but which may poison her entire family. Frequent warnings have been given of the danger of inadequate processes, and the prevention of human botulism will remain a difficult problem until safe processing procedures are employed in the household for the preservation of certain vegetables. This opinion has been borne out by the large yearly tolls of botulism caused by home-canned foods.

Botulism Outbreaks for the Years 1929-1933

Location	Product	Method of Preparation	Cases	Deaths
Chicago	Shallots	Imported	2	1
California	Persimmons			
Yakima	String Beans	Home Canned	2	
The Dalles	Beets	Home Canned	2	1
Green Bay	Celery	Home Canned	2	2
Hudson, Wyo.	Beans	Home Canned	6	4
Salida, Colo.	Sausage and Tomatoes?		4	2
California	Pork Loin	Home Pickled	3	2

1930 Outbreaks

Trinidad, Colo.	Chili con Carne	Home Canned	3	2
Sidney, Neb.	Asparagus	Home Canned	4	2
Sentinel, Butte	String Beans	Home Canned	4	4
Torrance, Cal.	Tuna	Home Canned	5	3

1931 Outbreaks

Scotts Bluff	Spinach	Home Canned	2	2
Purrell, Colo.	String Beans	Home Canned	3	2
Amarillo, Tex.	Spinach	Home Canned	2	2
Los Angeles	Antipasto	Imported	3	1
Bishop, Cal.	String Beans	Home Canned		1
Saugerties, N.Y.	Spinach or Chard	Home Canned	5	2 (?)
Grafton, N.D.	Vegetable Salad	Home Canned	16	13
Newport, Ore.	Salmon (Smoked)	Home Canned	2	2
Pueblo, Colo.	Corn	Home Canned	42	Chickens

1932 Outbreaks

Pueblo, Colo.	Peppers	Home Canned	2	2
Biola Fresno	Corn	Home Canned	1	1
Bordeaux, Wash.	Corn	Home Canned	1	1
Phillipsburg, Pa.	String Beans	Home Canned	2	2
Verdel, Neb.	Corn	Home Canned	3	3
Burger, Tex.	Beet Tops	Home Canned	2	2
Gordon, Mont.	Pork	Home Canned	4	2
Glenwood, Spr.	Cauliflower	Home Canned	1	1
Cleveland	String Beans	Home Canned	0	0
Maryville, Tenn.	Vegetable Soup Mix	Home Canned	7	6
Modale, Ia.	Corn	Home Canned	24	23
Sams Valley, Ore.	Carrots	Home Canned		Horse and Chickens

1933 Outbreaks

Coeur d'Alene	Beans	Home Canned	4	2
Miles City	String Beans	Home Canned	3	2
Corona, Cal.	Beets	Home Canned	2	1
Morro Bay, Cal.	Beets	Home Canned	2	2
Dayton, Wash.	Beets	Home Canned	5	3
Lakeside, O.	Beets (?)	Home Canned	3	2
Missoula, Mont.	Beet Tops	Home Canned	3	3
Santa Margarita	Green Peppers	Home Canned	2	2
Zurich, Ont.	Tomatoes (?)	Home Canned	3	1
Alamosa, Cal.	Corn	Home Canned	84	Chickens and Turkeys
Joseph, Ore.	Spinach	Home Canned	83	Chickens

Any method of food preservation may be evaluated largely from two positions—spoilage and food poisoning. The former has been almost entirely ignored by some of those who disseminate information to the home-canner. Little actual information is available, however, on spoilage, for the average home-maker keeps no records. Neither is she trained to detect all kinds of spoilage, and undoubtedly many home-canned foods which have started to spoil, are prepared for the table because evidences of spoilage are not sufficiently pronounced. Although this phase of the problem need not be stressed unduly, spoilage is closely related to poisoning. A preserved fruit in which considerable spoilage has taken place may be potentially dangerous. *Clostridium botulinum*, the agent of poisoning of greatest interest in this connection, may produce profound changes in food-stuff. Foods which have undergone such changes would ordinarily be excluded from the diet. However, it is definitely known that toxin may be present without evidences of decomposition.

Few studies seem to have been made on the keeping qualities of food preserved by methods used by the home-maker, but some experimental studies show that the period elapsing between processing and opening varied from 2 months to 5 years and averaged 1 year. In general, jars which were stored for longer times showed greatest spoilage. Containers which had imperfect closures were excluded from the summary. Bacteriological examinations were, in general, not made. cursory examination for the usual signs of spoilage (condition of the container, appearance, odour and sometimes flavour) was the only criterion. Bacteriological examination would probably have shown higher incidence of under-sterilization. Of 3,434 jars and cans of food, most of which were processed in boiling water, 1,659, or 48 per cent, showed evidences of spoilage. Of 783 jars processed in the steam pressure cooker, 93, or 12 per cent, spoiled. The foods most frequently spoiled were meats, fish, corn, lima beans and peas. Meats and fish processed in the water bath showed heavy spoilage.

Spoilage might be considered to be of economic importance mainly and botulism of public health significance. *Cl. botulinum*, however, is a spoilage organism and any pack of non-acid home-canned foods in which there is an undue amount of spoilage may be considered to be potentially dangerous because it has probably been under sterilized.

Canned food technologists are agreed that non-acid foods must be processed only under steam-pressure. Steam-pressure cookers have been devised for this purpose, but the mere use of such a cooker is not sufficient, for it must be correctly used and non-technical home-makers must be taught to appreciate the necessity of following instructions which come with the cooker. Some of these instruction books should be more carefully written.

Processing of non-acid foods in the oven will not result in a sterile product or in a product which will keep when stored at higher temperatures. It is probably the poorest method that can be advised for cooking canned foods.

The success of any method of processing canned foods is determined largely by the rapidity of heat penetration into the container and the thermal destruction time of spoilage micro-organisms at the pressure and temperature. This is easily understood when the thermal resistance of *Cl. botulinum* at 212° and 240° is compared. The resistance of this organism at 212°F. is 360 minutes, while at 240° it is only 10 minutes in neutral phosphate solution. Unless sufficient heat penetrates to the centre of the jar to destroy micro-organisms the product may spoil.

As the relation of inadequate processing to botulism and the relatively greater difficulty of processing non-acid foods was established, acidification of non-acid

foods with lemon juice or vinegar was suggested. Having established that a hydrogen ion concentration of 4.5 had protective action by inhibiting development of *Cl. botulinum*, it was believed that this could be attained by addition of acid. Non-acid foods are highly buffered; consequently such large amounts of acid would have to be added that flavour would be affected.

That many who recommend procedures to home-canners do not have entire confidence in the products is suggested by the oft-repeated advice, "all vegetables and meats canned at home should be boiled 10 to 15 minutes before tasting," or "thoroughly re-heat all canned vegetables and meats before using." The advice is also given that if home-canned vegetables are desired for salad, re-heat and then cool before using.

Canning contests are frequently used by some manufacturers and others to stimulate interest in home-canned foods. Foods packed for such exhibitions are judged mainly by colour and appearance and not on the basis of sterility. In fact, one home-canning instruction book states: "Temperatures higher than boiling tend to injure the delicate colour and texture of most fruits." The implication is then that colour and texture are paramount. Boiling water processes are generally considered to be safe for fruits if the time is sufficiently long.

Attention is also directed to the statements made in many publications of manufacturers of canning supplies for the home-maker. Many of them are not only unsound bacteriologically, but may mislead a home-maker into situations where she may not only subject her family to serious health hazards, but pack a product which will show high incidence of spoilage when stored under average conditions in the home. Health officers and others may play a role in directing attention to sound practice for preservation of foods by canning in the home.



COMMUNICABLE DISEASES REPORTED

Urban and Rural : May, 1935

Occurring in the Municipalities of:—

Mumps: Total 592—Winnipeg 557, St. Boniface 14, Kildonan East 8, Kildonan West 4, Fort Garry 3, Arthur 2, Brandon 1, Strathcona 1, St. James 1, Transcona 1.

Measles: Total 385—Winnipeg 141, Melita 48, Unorganized 44, Arthur 17, Riverside 15, Charleswood 14, Portage Rural 11, Virden 10, Souris 7, St. Vital 6, Morris Rural 5, Franklin 4, Montcalm 4, Gilbert Plains Rural 3, St. Paul East 3, Woodlands 3, Minitonas 2, The Pas 2, Argyle 1, Brooklands 1, Ethelbert 1, Fort Garry 1, Glenella 1, Hamiota Rural 1, Kildonan North 1, Kildonan West 1, Macdonald 1, Oakland 1, Shellmouth 1, Springfield 1, Stonewall 1, Strathcona 1, Ste. Rose Rural 1, Turtle Mountain 1. (Late reported, February: Hanover 1; March: Strathcona 3, Unorganized 2, Dauphin Rural 1, Mossey River 1, Portage Rural 1, Swan River Town 1; April: Unorganized 16, The Pas 2, Virden 1, Wallace 1).

Whooping Cough: Total 192—Winnipeg 150, St. Boniface 15, Brandon 9, Boissevain 3, St. Vital 3, Unorganized 3, St. James 2, Transcona 1, Whitehead 1. (Late reported, April: Brandon 5).

Influenza: Total 184—Winnipeg 1. (Late reported, January: Unorganized 1; March: Unorganized 177, Norfolk North 1, Portage Rural 1, Rosssburn Rural 1, Unorganized 2).

Chickenpox: Total 126—Winnipeg 97, Louise 3, Macdonald 3, St. Andrews 3, St. James 3, St. Vital 3, Whitewater 3, Fort Garry 2, St. Boniface 2, The Pas 2, Kildonan West 1, Portage Rural 1, Rosser 1, Selkirk 1, Thompson 1.

Tuberculosis: Total 54—Winnipeg 18, Unorganized 7, Brandon 4, Ellice 3, St. Andrews 3, Gilbert Plains Village 2, St. Boniface 2, Boulton 1, Charleswood 1, Daly 1, Dufferin 1, Franklin 1, Hillsburg 1, Montcalm 1, Mossey River 1, Rhineland 1, Rockwood 1, Russell Rural 1, St. Clements 1, St. Laurent 1, The Pas 1, Whitemouth 1.

Scarlet Fever: Total 49—Winnipeg 14, Glenella 7, Pembina 4, Strathclair 3, St. Vital 3, Woodlands 3, St. Andrews 2, Fort Garry 1, Gilbert Plains Rural 1, Kildonan Old 1, Norfolk North 1, Portage City 1, Silver Creek 1, St. Boniface 1, Thompson 1. (Late reported, January: Fort Garry 1; March: Fort Garry 1; April: Whitehead 3).

German Measles: Total 33—St. Boniface 14, Kildonan West 13, Brandon 5, Woodlands 1.

Erysipelas: Total 8—Winnipeg 4, Brandon 2, Kildonan East 1, Kildonan North 1.

Diphtheria: Total 7 — Unorganized 2, Winnipeg 1, Charleswood 1, Lawrence 1, Morden 1, Ste. Anne 1.

Diphtheria Carrier: Total 7—Winnipeg 4, Ste. Anne 2, La Broquerie 1.

Typhoid Fever: Total 3—Portage Rural 1, Selkirk 1. (Late reported, April: DeSalaberry 1).

Trachoma: Total 2—Franklin 1, Plum Coulee 1.

Puerperal Fever: Total 2—Daly 1, Unorganized 1.

Lethargic Encephalitis: Total 1 — (Late reported, April: Kildonan West 1).

Venereal Diseases: Total 89—Gonorrhoea 58, Syphilis 31.



DEATHS FROM ALL CAUSES IN MANITOBA

For the Month of February, 1935

URBAN—Cancer 28, Pneumonia (all forms) 10, Tuberculosis 8, Diphtheria 2, Influenza 2, Puerperal 2, Lethargic Encephalitis 1, Measles 1, Scarlet Fever 1, Typhoid Fever 1, Whooping Cough 1, Erysipelas 1, Syphilis 1, all others under one year 1, all other causes 142, Stillbirths 11. Total 213.

RURAL—Cancer 32, Pneumonia (all forms) 21, Tuberculosis 18, Influenza 5, Measles 1, Puerperal 3, Syphilis 1, all others under one year 9, all other causes 150. Stillbirths 14. Total 258.

INDIANS—Tuberculosis 10, Pneumonia (all forms) 5, German Measles 1, Influenza 1, Diphtheria 1, all other causes 11. Total 29.

Medical Library University of Manitoba

A summary of the contents of some of the journals available for practitioners, submitted by the Faculty of Medicine of the University of Manitoba. Compiled by T. E. HOLLAND, B.Sc., M.D. (Man.), F.R.C.S. (Edin.).

It is pointed out for the information of borrowers that the Medical Library now subscribes to two copies of (1) *The Practitioner* and (2) *The Clinical Journal*. Requests for these journals have been very numerous, and to meet this demand the extra copy is being taken.

"The Canadian Medical Association Journal"

—June, 1935.

"Observations on the Treatment of Dysmenorrhoea with the Placental Extract 'Emmenin'" —by M. C. Watson, M.B. (Tor.), Toronto.

"The Treatment of Menorrhagia and Metrorrhagia by Anterior-Pituitary-like Hormone" —by D. Nelson Henderson, Toronto.

"The Diagnosis and Treatment of Malignant Hypertension" —by C. P. Howard, F.R.C.P. (C), Montreal.

"Carcinoma of the Small Intestine" — by F. D. Ackman, M.D., Montreal.

—A comprehensive study of the condition and review of the literature. Seven case reports are given.

"Infection of the Mouth in relation to Dysentery, with report of a case of Intestinal Amoebidosis" —by Pauline Beregoff, M.D., Montreal. —by Pauline Beregoff, M.D., Montreal.

"The De Rivas Thermal Method of Treatment in Intestinal Amoebidosis" — by Pauline Beregoff, M.D., Montreal.

"The Nature of Post-Splenectomy Anaemia" —by R. Gottlieb, M.Sc., M.D., Montreal.

"The Use of Hypnotics" —by V. E. Henderson, Toronto.

"Latent Syphilis" — by S. C. Peterson, M.D., Winnipeg.

—An address delivered at the Annual Meeting of the Manitoba Medical Association, Winnipeg, Sept. 1934.

A number of other good papers and case reports are to be found in this issue of the *Journal*.



"The Practitioner"—June, 1935.

"The Normal Management of Labour" —by Sir Comyns Berkeley, F.R.C.S., F.R.C.P., F.C.O.G., London.

"The Expectant Mother: Diet and Regime" —by Leslie Williams, M.D., F.R.C.S., F.C.O.G., London.

"The Use and Abuse of Forceps in Midwifery" —by C. S. Lane-Roberts, M.S., F.R.C.S., F.C.O.G., London.

"The Treatment of Puerperal Sepsis" —by G. F. Gibberd, M.B., F.R.C.S., M.C.O.G., London.

"The Neurotic Physical Symptoms—Their Early Recognition" —by Henry Wilson, M.D., M.R.C.P.

"Depression" — by Ernest Snowden, M.B., B.S., London.

—The subject discussed is the psychological—not the 1930-35 variety. A number of case reports are given and treatment outlined.

"Ear Disease as a Menace to Life, with particular reference to Life Insurance" — by Thomas Guthrie, F.R.C.S.

"The Clinical Journal"—May, 1935.

"Visceral Neurosis" — by John A. Ryle, M.D., F.R.C.P.

"Observations on Some Newer Methods of Diet Therapy"—by D. Murray Lyon, M.D., F.R.C.P. (Edin.).

"Observations on the Acute Abdominal Emergencies of Childhood"—by F. A. R. Stammers, M.B., F.R.C.S., Birmingham.

"The Causation of Erythema Nodosum" — by Ronald E. Smith, M.B., M.R.C.P., Rugby.

"Some Ophthalmic Problems in General Practice"—by J. N. Tennent, M.B., D.O.M.S.

"Post-Partum Haemorrhage and Obstetric Shock"—by Wentworth Taylor, M.D., M.C.-O.G., Dublin.

"Air Embolism"—by C. Keith Simpson, M.D.
—Description of a number of cases in which death followed in a few seconds after opening into a large vein during operation.

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"The Clinical Journal"—June, 1935.

"Nervous Breakdown"—by C. P. Symonds, M.D., F.R.C.P., London.

"Malnutrition"—by Robert Hutchinson, M.D., F.R.C.P., London.

"The Eye in Relation to General Medicine"—by Adolphe Abrahams, M.D., F.R.C.P., London.

"Surgical Treatment of Pulmonary Tuberculosis"—by George A. Mason, F.R.C.S. (Eng.), Sunderland.

"Hydronephrosis and Pyonephrosis"—by H. L. Attwater, M.B., F.R.C.S.

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"Edinburgh Medical Journal"—June, 1935.

"Pernicious Anaemia—Some considerations in regard to its Nature and Pathogenesis"—by J. P. McGowan, M.A., M.D., Aberdeen.

"Splenic Anaemia"—by John McMichael, M.D., M.R.C.P.E., Edinburgh.

—The above two papers deal with the clinical and pathological aspects very extensively, while treatment is not included to any great extent.

"The Use of Ultra-Violet Light in the Treatment of Pre-Eclamptic Toxaemia"—by A. T. B. Dickson, Edinburgh.

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"The Canadian Public Health Journal"—May, 1935.

"Amoebic Dysentery"—by A. Boldue, M.D., Department of Health, Montreal.

Symposium in Common Poisonings:

1. "Poisonings Common in General Practice"—by V. F. Stock, B.A., M.D.

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2. "Common Industrial Poisons" — by A. R. Riddell, M.B., D.P.H.
3. "Poisonings Common in Children" — by John R. Ross, M.D., and Alan Brown, M.B., F.R.C.P. (C.).

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"The American Journal of Surgery"

—June, 1935.

"Sealenus Anticus Syndrome"—by Alton Och-sner, M.D., M. Gage, M.D., and Michael De Bakey, M.D.

—A good paper on this subject in which signs and symptoms are those of cervical rib but where no cervical rib is present.

"Post-Operative Thrombosis and Embolism"—by Frederick W. Bancroft, M.D. et. al.

"Coronary Occlusion simulating an Acute Ab-dominal Emergency"—by J. M. T. Finney, M.D., and Charles F. Mohr.

"Suppurative Pericarditis"—by George H. Bunch, M.D.

"Injuries Peculiar to Modern Football" — by Lucian H. Laundry, M.D.

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"The Lancet"—June 8th, 1935.

"Late Results of the Operative Treatment of Osteoarthritis of the Hip Joint"—by C. Max Page, D.S.O., M.S., F.R.C.S.

—Illustrated by photographs, x-rays and tables.

"The Lancet"—May 4th, 1935.

"New Aspects of Deficiencies in Nutrition"—by Donald Hunter, F.R.C.P., London.

"One Hundred Cases of Chronic Arthritis Treat-ed by Gold"—by H. S. Pemberton, M.B., M.R.C.P.

—Twelve cases have been cured, thirty-eight very much improved and thirty-eight improved. Twelve remain the same.

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"The Canadian Public Health Journal"

—February, 1935.

"The Development of Public Health in Manitoba"—by Ross Mitchell, M.D., Winnipeg.

—This article deals with the development of public health regulations from 1812 until the present day.

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"The British Medical Journal"—Dec. 29, 1934.

"The Problem of the Septic Hand"—by R. Ken-non, M.D., F.R.C.S.

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"The British Medical Journal"—March 16, 1935.

"The Differentiation and Aberrations of Sex Characteristics"—by W. Blair-Bell, M.D., F.R.C.S., F.C.O.G., F.A.C.S.

"Encephalomyelitis Simulating Diphtheritic Par-alysis"—by Stanley Wyard, M.D., M.R.C.P., and Neill Hobhouse, M.D., F.R.C.P.

—Four cases are reported with palatal paralysis at first attributed to diphtheria but probably due to an encephalomyelitis.

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"The Lancet"—March 16, 1935.

"Treatment of Vulvo-Vaginitis with Oestrin"—by David Nabarro, M.D., F.R.C.P., and A. Gordon Signy, M.B., London.

—The difficulties of treatment of Gonococcal Vulvo-Vaginitis in children are discussed and the impressive results obtained by the use of Oestrin are given. The discharge is soon diminished, rendering the patient non-infective and the time for the whole treatment is considerably shorter than by other methods.

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"The Clinical Journal"—March, 1935.

"Recent Advances in the Diagnosis and Treat-ment of Intestinal Obstructions"—by David H. Patey, M.S., F.R.C.S., Assistant Surgeon, Middlesex Hospital.

"Gynæcological Diagnosis"—by Alfred Gough, Ch.M., F.R.C.S., F.C.O.G., Surgeon, Hospital for Women, Leeds.

—An article dealing with history-taking and routine, and special examinations.

"Torsion of the Hydated of Morgagni"—by Alex. E. Roche, M.D., F.R.C.S., Assistant Genito-Urinary Surgeon, West London Hospital.

—A good article.

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